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EXAMINER

LIVEDALEN, BRIAN J

ART UNIT	PAPER NUMBER
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2878

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06/08/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/823,323

Applicant(s)

BOS ET AL.

Examiner

Brian J. Livedalen

Art Unit

2878

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 April 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 103-128 and 130-147 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 127 and 128 is/are allowed.
- 6) ☒ Claim(s) 103-126 and 130-147 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 13 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

This action is in response to amendment filed 4/4/2007. Claims 103-128 and 130-147 are pending.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 103-105, 107-120, 125, 126, and 134-146 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bechtel et al. (5451822) in view of Noack (4355271) and in further view of Vachss (5313072).

In regard to claim 103, Bechtel discloses (fig. 1) an interior rearview mirror system suitable for use in a vehicle; the interior rearview mirror system includes an interior rearview mirror assembly having an electrochromic reflective element (M-I, M-O) (column 8, lines 15-30); a sensor (DS) positioned in the interior of the vehicle and with a field of view through a window of the vehicle to the exterior of the vehicle, the sensor generating outputs indicative of the sensed light (column 8, lines 54-60); a control responsive to the outputs of the sensor and being operable to control a headlamp of the vehicle responsive to the outputs; the control being operable to process the outputs with

Art Unit: 2878

at least one of a filtering process, an edge detection function, and a detection control function (column 15, lines 27-41); and wherein the control at least one of (a) accesses a common component of the electronic circuitry operable to control the electrochromic element, and (b) shares a common component of the electronic circuitry operable to control the electrochromic element (column 8, lines 45-53). Bechtel remains silent regarding the control operable to control windshield wipers or a defogging system. However, Noack discloses (fig. 1) an interior rearview mirror system with a controller to control both headlamps and windshield wipers (column 2, lines 17-32). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the control system to incorporate the sensor to also control windshield wipers in order to increase functionality and automation of the sensor and to produce a more cost effective product. Bechtel in view of Noack disclose using a sensor to detect light to control both headlamps and windshield wipers. However, Bechtel in view of Noack remain silent regarding the sensor detecting images. However, Vachss discloses (fig. 1) an interior rearview mirror system that uses imaging arrays to perform detection (abstract); wherein the imaging array is a two-dimensional pixilated imaging array of light sensing photosensor elements (column 2, line 60 - column 3, line 3). Note, a pixilated imaging sensor inherently has a semiconductor substrate. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use imaging arrays to detect the light and moisture in order to provide greater accuracy in detecting and controlling the headlamps and windshield wipers.

In regard to claim 134, Bechtel discloses (fig. 1) an interior rearview mirror system suitable for use in a vehicle; the interior rearview mirror system includes an interior rearview mirror assembly adapted for attachment to an interior portion of the vehicle, the rearview mirror assembly having an electrochromic reflective element (M-I, M-O) (column 8, lines 15-30); a first sensor (DS) positioned in the interior of the vehicle and with a field of view through a window of the vehicle to the exterior of the vehicle, the sensor generating outputs indicative of the sensed light (column 8, lines 54-60); a control responsive to the outputs of the sensor and being operable to control a headlamp of the vehicle responsive to the outputs (column 8, lines 45-53); the control being operable to process the outputs with at least one of a filtering process, an edge detection function, and a detection control function (column 15, lines 27-41). Bechtel remains silent regarding a second sensor and the control operable to control windshield wipers or the vehicle. However, Noack discloses (fig. 1) an interior rearview mirror system with a sensor (43) and controller to control both headlamps and the rate of windshield wipers (column 2, lines 17-32). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the control system to incorporate another sensor and to use the sensor to also control the rate of windshield wipers in order to increase functionality and automation of the sensor and to produce a more cost effective product. Bechtel in view of Noack discloses using two sensors to detect light to control both headlamps and windshield wipers that are located in the interior cabin of the vehicle at or near the interior rearview mirror assembly. However, Bechtel in view of Noack remain silent regarding the sensors being imaging arrays.

Art Unit: 2878

However, Vachss discloses (fig. 1) an interior rearview mirror system that uses imaging arrays to perform detection (abstract); wherein the imaging array is a two-dimensional pixilated imaging array of light sensing photosensor elements (column 2, line 60 - column 3, line 3). Note, a pixilated imaging sensor inherently has a semiconductor substrate. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use imaging arrays to detect the light and moisture in order to provide greater accuracy in detecting and controlling the headlamps and windshield wipers.

In regard to claim 104, Bechtel discloses that the imaging sensor is positioned in the interior of the vehicle at or near the interior rearview mirror assembly and has a field of view forward and through a windshield of the vehicle (column 8, lines 54-60).

In regard to claim 105, Bechtel in view of Noack and Vachss discloses that the imaging sensor includes first and second imaging arrays, the control being operable to control at least one of a windshield wiper of the vehicle and a defogging system of the vehicle in response to an output from the first imaging array (Noack, fig. 1, 43), and the control being operable to control a headlamp of the vehicle in response to an output signal from the second imaging array (Bechtel, fig. 1, DS).

In regard to claim 107, Bechtel discloses that the first imaging sensor is positioned in the interior of the interior of the vehicle at or near the interior rearview mirror assembly and has a field of view forward and through a windshield of the vehicle (column 8, lines 54-60).

In regard to claim 108, Bechtel discloses that at least a portion of the electronic circuitry is included on a printed circuit board (column 6, lines 60-63).

In regard to claims 109-114 and 137-139, Bechtel discloses (fig. 5e) that the electronic circuitry includes a display element that includes a vehicle status display, wherein the display element provides at least two display functions and may be selectively operable to provide one of the two display functions, and the display element may be selectively switched between the at least two display functions in response to a vehicle status change (column 13, line 48 – column 14, line 29).

In regard to claim 115, Bechtel discloses that control is operable to control a headlamp of the vehicle in response to a level of light present at the windshield (column 8, lines 54-60).

In regard to claims 116, 118, 135, and 140, Noack discloses that the control is operable to process outputs to detect water droplets at the exterior surface of the window and fog particles at the interior surface of the window and operable to control a window wiper of the vehicle in response to the detection of water droplets at the exterior surface of the window (abstract).

In regard to claims 117 and 136, Bechtel in view of Noack discloses that the control is operable to control a window wiper of the vehicle in response to a detection of the presence of water droplets at the exterior or the surface, but fails to disclose the control being operable to control a defogging system of the vehicle in response to a detection of the presence of fog particles at the interior of the window. However, Vachss discloses a controller that detects both rain and fog and is operable to control a

defogging system (column 3, lines 62-65). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the controller control a defogging system to increase the functionality of the system and to increase the visibility of the user.

In regard to claims 119, 120 and 141, Noack discloses that the control is operable to adjust the rate of the wipe in response to a quantity of water droplets sensed at the exterior of the window (column 7, line 42 – column 8, line 16).

In regard to claims 125 and 126, Noack (fig. 1) discloses an illumination device (26) for illuminating at least a portion of the field of view of the imaging sensor; wherein the illumination device is at least occasionally activated (abstract).

In regard to claims 142-144, Bechtel in view of Noack and Vachss discloses that the first and second imaging arrays are positioned at the interior rearview mirror assembly and at least one is positioned within the rearview mirror assembly (Bechtel, (column 8, lines 54-60, Noack, column 4, lines 30-40).

In regard to claims 145 and 146, Bechtel in view of Noack and Vachss are not explicit regarding both sensors being placed within the rearview mirror. However, making parts integral does not make the limitation patentably distinct. *See In re Larson*, 340 F.2d 965, 968, 144 USPQ 347, 249 (CCPA 1965). It would have been obvious to one of ordinary skill in the art at the time the invention was made to place both sensors in the rearview mirror and decoupled from the windshield in order to reduce the size of the apparatus.

Claim 106 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bechtel et al. (5451822) in view of Noack (4355271) and in further view of Vachss (5313072) as applied to claims 105, and in further view of Bendicks et al. (5498866).

In regard to claim 106, Bechtel in view of Noack and Vachss discloses a system with a rain sensor. Bechtel in view of Noack and Vachss fails to disclose the imaging sensor for operation with the rain sensor having a field of view through a rear window of the vehicle. However, Bendicks teaches that it is common to image the rear window to detect rain (column 1, lines 14-20). It would have been obvious to one of ordinary skill in the art at the time the invention was made to image a field of view through a rear window in order to control a windshield wiper on the back window.

Claims 121-124 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bechtel et al. (5451822) in view of Noack (4355271) and in further view of Vachss (5313072) as applied to claim 119, and in further view of Shiraishi (4881019).

In regard to claims 121-124, Bechtel in view of Noack and Vachss discloses a system with which controls a front windshield wiper. Bechtel in view of Noack and Vachss fails to disclose also controlling a back windshield wiper as a function of the front windshield wiper. However, Shiraishi discloses (fig. 1) a control operable to control a back windshield wiper in response to detection of water droplets at the exterior surface of the windshield and controlling the back windshield wiper to cycle for every N cycles of front windshield wiper wherein the value of N varies as a function of the speed of the windshield wiper (column 12, lines 59-68). It would have been obvious to one of

ordinary skill in the art at the time the invention was made to use a back windshield wiper control in order to effectively maintain a clear back windshield using the most efficient speed.

Claim 130 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bechtel et al. (5451822) in view of Noack (4355271) and in further view of Vachss (5313072) as applied to claim 129, and in further view of Kobayashi et al. (5426294).

In regard to claim 130, Bechtel in view of Noack and Vachss discloses a system with an imaging sensor. Bechtel in view of Noack and Vachss fails to disclose the imaging sensor being a CCD sensor. However, Kobayashi discloses (fig. 14) a rearview mirror system with a CCD sensor (column 2, lines 37-40). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a CCD sensor in order to inexpensively image the windshield.

Claim 131 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bechtel et al. (5451822) in view of Noack (4355271) and in further view of Vachss (5313072) as applied to claim 103, and in further view of Kiyomoto et al. (5844682).

In regard to claim 131, Bechtel in view of Noack and Vachss discloses a system with an imaging sensor. Bechtel in view of Noack and Vachss fails to disclose the imaging sensor having a polarizing filter. However, Kiyomoto discloses placing a polarizing filter in front of a receiving element in a rain detection apparatus (column 28, lines 25-38). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a polarizing filter in front of the receiving element in

Art Unit: 2878

order to more accurately detect the reflected light and effectively eliminate errors due to the surface of the windshield.

Claim 132 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bechtel et al. (5451822) in view of Noack (4355271) and in further view of Vachss (5313072) as applied to claim 103, and in further view of Levers (5276389).

In regard to claim 132, Bechtel in view of Noack and Vachss discloses a system with an imaging sensor. Bechtel in view of Noack and Vachss fails to disclose that the rain sensor control is operable to apply an edge detection algorithm to the output signal to detect edges of rain droplets on a surface of a window. However, Lever discloses (fig. 5) a rain sensor with an edge detection algorithm used for detecting edges of rain droplets (column 10, lines 12-30). It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply a edge detection algorithm in order to more accurately detect the amount of rain on the windshield.

Claim 133 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bechtel et al. (5451822) in view of Noack (4355271) and in further view of Vachss (5313072) as applied to claim 103, and in further view of Teder (5568027).

In regard to claim 133, Bechtel in view of Noack and Vachss discloses a system with an imaging sensor. Bechtel in view of Noack and Vachss fails to disclose that the rain sensor control is operable to apply a filtering or smoothing algorithm to the output signal to reduce the effects of scratches on the window of the vehicle. However, Teder

Art Unit: 2878

teaches using a filtering or smoothing algorithm to the output signal to reduce the effects of scratches on the window of the vehicle (column 3, line 63 – column 4, line 5).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a filtering algorithm in order to reduce unwanted noise resulting from defects.

Claim 147 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bechtel et al. (5451822) in view of Vachss (5313072) and in further view of Stam et al. (5837994).

In regard to claim 147, Bechtel discloses (fig. 1) an interior rearview mirror system suitable for use in a vehicle; the interior rearview mirror system includes an interior rearview mirror assembly adapted for attachment to an interior portion of the vehicle, the rearview mirror assembly having an electrochromic reflective element (M-I, M-O) (column 8, lines 15-30); a first sensor (DS) positioned in the interior of the vehicle and with a field of view through a window of the vehicle to the exterior of the vehicle, the sensor generating outputs indicative of the sensed light (column 8, lines 54-60); a control responsive to the outputs of the sensor and being operable to control a headlamp of the vehicle responsive to the outputs (column 8, lines 45-53); the control being operable to process the outputs with at least one of a filtering process, an edge detection function, and a detection control function (column 15, lines 27-41). Bechtel remains silent regarding a second sensor and the control operable to control windshield wipers or the vehicle. However, Vachss discloses (fig. 1) an interior rearview mirror

Art Unit: 2878

system with an imaging array (18) and controller to control the rate of windshield wipers (abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the control system to incorporate another sensor and to use the sensor to also control the rate of windshield wipers in order to increase functionality and automation of the sensor and to produce a more cost effective product. Vachss further discloses that the control is operable to adjust the rate of wipe of a windshield wiper of the vehicle responsive to images sensed by the first imaging array; wherein the control adjusts the rate of wipe of a windshield wiper of the vehicle in response to detection of water droplets at the exterior surface of the windshield (column 2, lines 3-14); wherein the control is operable to process the outputs to detect water droplets at the exterior surface of the window and fog particles at the interior surface of the window; wherein the control controls a defogging system of the vehicle (column 3, lines 62-65). Bechtel in view of Vachss disclose using two sensors to detect light to control both headlamps and windshield wipers that are located in the interior cabin of the vehicle at or near the interior rearview mirror assembly and decoupled from the windshield. However, Bechtel in view of Vachss remains silent regarding the sensors being CMOS imaging arrays. However, Stam discloses (fig. 5) an interior rearview mirror system that uses CMOS imaging arrays to perform detection (column 4, line 66 – column 5, line 11). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use CMOS imaging arrays to detect the light to provide greater accuracy in detecting and reduction of noise inexpensively for controlling the headlamps and windshield wipers.

Allowable Subject Matter

Claims 127 and 128 are allowed.

The following is an examiner's statement of reasons for allowance: Claims 127 and 128 are neither anticipated nor made obvious by the prior art of record for the reasons set forth in the office action dated 2/6/2006.

Response to Arguments

Applicant's arguments filed 4/4/2007 have been fully considered but they are not persuasive.

Applicant asserts that there is no motivation or reason to combine the above references. Specifically, Applicant asserts that there is no motivation to use an imaging sensor in replace of a photodiode to control headlights. However, Vachss teaches the use of an imaging array to detect ambient conditions. Generally, replacing a photodiode with an imaging array allows for more accurate detection and reduces the occurrence of errors. Applying this concept to the control of headlights would allow for the headlight control to be more finely realized and would reduce instances where the sensor would misinterpret other ambient conditions as sufficient for headlight actuation. Although not relied on in the rejection of claims 103 and 134, Stam '994 exemplifies the use of an imaging array to control the operation of headlights in order to dim the headlight in certain situations. Furthermore, it is well known in the light detection art to incorporate imaging to enhance precision in detecting. Applicant goes on to argue with regard to

Art Unit: 2878

claim 147, that the references do not teach every element of the claimed invention.

Although the references do not teach all of the limitations standing alone, the combination, when viewed as a whole, teaches every limitation of the claimed invention.

For example, Applicant states, "[t]here is no disclosure or suggestion in Bechtel '822, Vachss, and/or Stam '994 of a first CMOS imaging array positioned in the interior of the vehicle with a field of view through the windshield to the exterior of the vehicle, and a second CMOS imaging array positioned in the interior of the vehicle and with a field of view through the windshield to the exterior of the vehicle." This is true when referring to a single reference, but the combination does teach the above limitation. Bechtel teaches using a first sensor (DS) that has a field of view through the windshield to the exterior of the vehicle. Vachss teaches using a second sensor (18) that has a field of view through the windshield to the exterior of the vehicle. Stam '994 then teaches the missing limitation, that is, the use of CMOS imaging arrays for sensing. This logical outcome of this combination reads directly on the limitation. The same applies for the other alleged missing limitations. Accordingly, the rejections over the cited references stand.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian J. Livedalen whose telephone number is (571) 272-2715. The examiner can normally be reached on 8:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on (571) 272-2328. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



THANH X. LUU
PRIMARY EXAMINER